

**ABSTRACT**

The present invention relates to an apparatus for use in the determination of a condition or state of an object based on quasi-elastic interaction between the object and light transmitted to the object, the apparatus comprising a beam splitter arrangement for splitting an incoming light beam of wavelength,  $\lambda$ , into a diffracted light beam and an undiffracted light beam, the beam splitter arrangement comprising a first and a second diffractive member, the first diffractive member transforming the light beam emitted by the light source into the diffracted and the undiffracted light beams, the second diffractive member receiving the diffracted light beam and diffracting the received light beam in a direction substantially parallel to the undiffracted light beam from the first diffractive member, wherein the diffracted light beam, after being diffracted by the second diffractive member, and the undiffracted light beam from the first diffractive member are separated by a distance,  $d$ , said distance,  $d$ , being dependent on wavelength,  $\lambda$ .